

WHAT IS CLAIMED IS:

1. A multiplexer which multiplexes a plurality of elementary data streams to generate one multiplexed stream, the apparatus comprising:

a memory which stores a supplied plurality of elementary data streams;

an instruction generating means for generating multiplexing instruction data having stated therein a storage location, in the memory, of a data unit composed of successive elementary data streams each in an arbitrary amount correspondingly to each data unit and storing the generated multiplexing instruction data into the memory in an order of multiplexing corresponding data units; and

a multiplexed stream generating means for generating one multiplexed stream by reading the multiplexing instruction data sequentially one by one from the memory, reading the data units sequentially from the storage locations stated in the read multiplexing instruction data and by outputting the read data units.

2. A multiplexer which multiplexes a plurality of elementary data streams to generate one multiplexed stream, the apparatus comprising:

a memory which stores a supplied plurality of elementary data streams;

an instruction generating means for generating multiplexing instruction data having stated therein a storage location, in the memory, of a data unit composed of successive elementary data streams each in an arbitrary amount correspondingly to each data unit while generating command instruction data having stated therein an instruction for execution of a data processing to be executed in an arbitrary position

in the multiplexing instruction data, and storing the generated multiplexing instruction data and command instruction data into the memory in an order of multiplexing data units and execution instruction;

a multiplexed stream generating means for generating one multiplexed stream including the elementary data streams and command data by reading the multiplexing instruction data and command instruction data sequentially one by one from the memory, reading the data units sequentially from the storage locations stated in the read multiplexing instruction data and outputting the read data units, when having read the multiplexing instruction data, or by outputting command data having stated therein the execution instruction stated in the command instruction data, when having read the command instruction data; and

a command executing means which is supplied with a multiplexed stream output from the multiplexed stream generating means and makes a processing corresponding to an instruction content stated in the command data when the data row in the input multiplexed stream is command data, or outputs the input multiplexed stream as it is when the data row in the input multiplexed stream is elementary data stream.

3. The apparatus as set forth in claim 2, wherein:

the multiplexed stream generating means outputs, synchronously with the multiplexed stream, an ID flag for identifying which the data row in the multiplexed stream is, command data or elementary data stream; and

the command executing means judges based on the ID flag which the data row

in the supplied multiplexed stream is, command data or elementary data stream.

4. The apparatus as set forth in claim 2, wherein:

the instruction generating means generates, when inserting stuffing data into an output multiplexed stream, command instruction data having stated therein an instruction for inserting the stuffing data and amount of the stuffing data;

the multiplexed stream generating means outputs, when the read command instruction data has stated therein an instruction for inserting the stuffing data, the command data having stated therein the content stated in the command instruction data; and

the command executing means inserts, when the command data has stated therein an instruction for inserting the stuffing data, stuffing data whose amount is stated in the command data to a position of the command data in the multiplexed stream.

5. The apparatus as set forth in claim 2, wherein:

the instruction generating means generates, when deleting data from an output multiplexed stream, command instruction data having stated therein a data delete instruction and data amount to be deleted;

the multiplexed stream generating means outputs, when the read command instruction data has stated therein an instruction for deletion of data, the command data having stated therein the content stated in the command instruction data; and

the command executing means deletes, when the command data has stated

therein an instruction for deletion of the data, an amount of data stated in the command data from a multiplexed stream next to the command data.

6. The apparatus as set forth in claim 2, wherein:

the instruction generating means generates, when inserting arbitrary data into an output multiplexed stream, command instruction data having stated therein an instruction for insertion of the arbitrary data;

the multiplexed stream generating means outputs, when the read command instruction data has stated therein an instruction for insertion of the arbitrary data, the command data having stated therein the content stated in the command instruction data; and

the command executing means inserts, when the command data has stated therein an instruction for insertion of the arbitrary data, the arbitrary data stated in the command data to a position of the command data in the multiplexed stream.

7. The apparatus as set forth in claim 2, wherein:

the instruction generating means generates, when sending a timing acknowledgment in an arbitrary timing in an output multiplexed stream, command instruction data having stated therein an instruction for sending a timing acknowledgment;

the multiplexed stream generating means outputs, when the read command instruction data has stated therein an instruction for sending the timing acknowledgment, the command data having stated therein the content stated in the

command instruction data; and

the command executing means sends, when the command data has stated therein an instruction for sending the timing acknowledgment, the timing acknowledgment in a position of the command data in the multiplexed stream.

8. A multiplexer which multiplexes a plurality of elementary data streams to generate one multiplexed stream, the apparatus comprising:

a memory which stores a supplied plurality of elementary data streams;

a counting means for indicating a count which indicates a data occupancy of the memory;

an instruction generating means for generating multiplexing instruction data having stated therein a storage location, in the memory, of a data unit composed of successive elementary data streams each in an arbitrary amount correspondingly to each data unit and storing the generated multiplexing instruction data into the memory in an order of multiplexing corresponding data units; and

a multiplexed stream generating means for generating one multiplexed stream by reading the multiplexing instruction data sequentially one by one from the memory, reading the data units sequentially from the storage locations stated in the read multiplexing instruction data and by outputting the read data units;

the instruction generating means adding the data amount of a data unit corresponding to the generated multiplexing instruction data to the count; and

the counting means subtracting the data amount of output data unit from the

count.

9. The apparatus as set forth in claim 8, wherein:

the memory is divided in a plurality of storage areas correspondingly to the types of the elementary data streams and the supplied elementary data streams is stored into corresponding storage areas;

the counting means holds a plurality of counts corresponding to the storage areas in the memory;

the instruction generating means adds the data amount of a data unit corresponding to the generated multiplexing instruction data to a count corresponding to a storage area in which the data unit is stored; and

the counting means subtracts the data amount of data unit output from the memory from a count corresponding to the storage area in which the data unit is stored.

10. A multiplexer which multiplexes a plurality of elementary data streams to generate a plurality of multiplexed streams, the apparatus comprising:

a memory which stores a supplied plurality of elementary data streams;

an instruction generating means for generating multiplexing instruction data having stated therein a storage location, in the memory, of a data unit composed of successive elementary data streams each in an arbitrary amount correspondingly to each data unit and storing the generated multiplexing instruction data into the memory in an order of multiplexing corresponding data units; and

a multiplexed stream generating means for generating a plurality of multiplexed streams by reading the multiplexing instruction data sequentially one by one from the memory, reading the data units sequentially from the storage locations stated in the read multiplexing instruction data and by outputting the read data units;

the instruction generating means stating, in the multiplexing instruction data, the type of a multiplexed stream resulted from multiplexing data units corresponding to the generated multiplexing instruction data; and

the multiplexed stream generating means generating the plurality of multiplexed streams by switching the outputting of the read data unit correspondingly to the multiplexed stream type stated in the read multiplexing instruction data.

11. A multiplexing method in which a plurality of elementary data streams is multiplexed to generate one multiplexed stream, the method comprising the steps of:

supplying a plurality of elementary data streams and storing the supplied elementary data streams into a memory;

generating multiplexing instruction data having stated therein a storage location, in the memory, of a data unit composed of successive elementary data streams each in an arbitrary amount correspondingly to each data unit and storing the generated multiplexing instruction data into the memory in an order of multiplexing corresponding data units; and

generating means for generating one multiplexed stream by reading the multiplexing instruction data sequentially one by one from the memory, reading the

data units sequentially from the storage locations stated in the read multiplexing instruction data and by outputting the read data units.

12. A multiplexing method in which a plurality of elementary data streams is multiplexed to generate one multiplexed stream, the method comprising the steps of:

supplying a plurality of elementary data streams and storing the supplied elementary data streams into a memory;

generating multiplexing instruction data having stated therein a storage location, in the memory, of a data unit composed of successive elementary data streams each in an arbitrary amount correspondingly to each data unit while generating command instruction data having stated therein an instruction for execution of a data processing to be executed in an arbitrary position in the multiplexing instruction data, and storing the generated multiplexing instruction data and command instruction data into the memory in an order of multiplexing data units and execution instruction;

generating one multiplexed stream including the elementary data streams and command data by reading the multiplexing instruction data and command instruction data sequentially one by one from the memory, reading the data units sequentially from the storage locations stated in the read multiplexing instruction data and outputting the read data units, when having read the multiplexing instruction data, or by outputting command data having stated therein the execution instruction stated in the command instruction data, when having read the command instruction data; and

being supplied with a multiplexed stream output from the multiplexed stream

generating means and making a processing corresponding to an instruction content stated in the command data when the data row in the input multiplexed stream is command data, or outputting the input multiplexed stream as it is when the data row in the input multiplexed stream is elementary data stream.

13. The method as set forth in claim 12, wherein:

an ID flag for identifying which the data row in the multiplexed stream is, command data or elementary data stream, is outputted synchronously with the multiplexed stream; and

it is judged based on the ID flag which the data row in the supplied multiplexed stream is, command data or elementary data stream.

14. The method as set forth in claim 12, wherein:

when inserting stuffing data into an output multiplexed stream, there is generated command instruction data having stated therein an instruction for inserting the stuffing data and amount of the stuffing data;

when the read command instruction data has stated therein an instruction for inserting the stuffing data, there is outputted the command data having stated therein the content stated in the command instruction data; and

when the command data has stated therein an instruction for inserting the stuffing data, stuffing data whose amount is stated in the command data is inserted to a position of the command data in the multiplexed stream.

15. The method as set forth in claim 12, wherein:

when deleting data from an output multiplexed stream, there is generated command instruction data having stated therein a data delete instruction and data amount to be deleted;

when the read command instruction data has stated therein an instruction for deletion of data, there is outputted the command data having stated therein the content stated in the command instruction data; and

when the command data has stated therein an instruction for deletion of the data, an amount of data stated in the command data is deleted from a multiplexed stream next to the command data.

16. The method as set forth in claim 12, wherein:

when inserting arbitrary data into an output multiplexed stream, there is generated command instruction data having stated therein an instruction for insertion of the arbitrary data;

when the read command instruction data has stated therein an instruction for insertion of the arbitrary data, there is outputted the command data having stated therein the content stated in the command instruction data; and

when the command data has stated therein an instruction for insertion of the arbitrary data, the arbitrary data stated in the command data is inserted to a position of the command data in the multiplexed stream.

17. The method as set forth in claim 12, wherein:

when sending a timing acknowledgment in an arbitrary timing in an output

multiplexed stream, there is generated command instruction data having stated therein an instruction for sending a timing acknowledgment;

when the read command instruction data has stated therein an instruction for sending the timing acknowledgment, there is outputted the command data having stated therein the content stated in the command instruction data; and

when the command data has stated therein an instruction for sending the timing acknowledgment, there is sent the timing acknowledgment in a position of the command data in the multiplexed stream.

18. A multiplexing method in which a plurality of elementary data streams is multiplexed to generate one multiplexed stream, the method comprising the steps of:

supplying a plurality of elementary data streams and storing the supplied elementary data streams into a memory;

generating multiplexing instruction data having stated therein a storage location, in the memory, of a data unit composed of successive elementary data streams each in an arbitrary amount correspondingly to each data unit and storing the generated multiplexing instruction data into the memory in an order of multiplexing corresponding data units; and

generating one multiplexed stream by reading the multiplexing instruction data sequentially one by one from the memory, reading the data units sequentially from the storage locations stated in the read multiplexing instruction data and by outputting the read data units;

in the instruction generating step, there being added the data amount of a data unit corresponding to the generated multiplexing instruction data to a count in a counter indicating data occupancy of the memory; and

the data amount of data unit output from the memory being subtracted from the count.

19. The method as set forth in claim 18, wherein:

the memory is divided in a plurality of storage areas correspondingly to the types of the elementary data streams and the supplied elementary data streams is stored into corresponding storage areas;

the counter holds a plurality of counts corresponding to the storage areas in the memory;

the data amount of a data unit corresponding to the generated multiplexing instruction data is added to a count corresponding to a storage area in which the data unit is stored; and

the data amount of data unit output from the memory is subtracted from a count corresponding to the storage area in which the data unit is stored.

20. A multiplexing method in which a plurality of elementary data streams is multiplexed to generate a plurality of multiplexed streams, the method comprising the steps of:

supplying a plurality of elementary data streams and storing the supplied elementary data streams into a memory;

generating multiplexing instruction data having stated therein a storage location, in the memory, of a data unit composed of successive elementary data streams each in an arbitrary amount correspondingly to each data unit and storing the generated multiplexing instruction data into the memory in an order of multiplexing corresponding data units;

stating, in the multiplexing instruction data, the type of a multiplexed stream resulted from multiplexing data units corresponding to the generated multiplexing instruction data; and

generating a plurality of multiplexed streams by reading the multiplexing instruction data sequentially one by one from the memory, reading the data units sequentially from the storage locations stated in the read multiplexing instruction data and by outputting the read data units and by switching the outputting of the read data unit correspondingly to the multiplexed stream type stated in the read multiplexing instruction data.